

Progressive Campus I Chiller Plant

Chiller Plant Renovation Project • Energy Savings

Chiller Plant Renovation and Controls Optimization, Saves Client Energy and Operating Costs.

Progressive Campus I, the Progressive corporate headquarters, consists of 3 buildings built between 1973 and 1994. The North Building is 111,000 square feet and is comprised of mostly office space. West Block is 184,000 square feet and houses executive office space, dining and fitness facilities. East Block is 354,000 square feet and contains the primary 24/7 call center serving the entire Progressive organization.

Challenge

Progressive Campus I had a vintage chiller plant with aging equipment and controls nearing the end of their service life cycle. Progressive, with the help of HF Lenz Company and Gardiner, took this opportunity to re-evaluate the chiller plant. The campus load had decreased dramatically in the past 18 years of operation, due in large part, to the energy efficiency retrofits to the air handling units and the decommissioning of the legacy North building data center. The existing constant speed chillers were improperly sized for the new load profile, leading to wasted energy and increased electrical expense. The plant also had an existing building automation controls system (BAS) that did not integrate with the other facilities in the Progressive portfolio.

Solution

A new high efficiency 400-ton swing chiller was selected to best serve the reduced load, being roughly a third of the size of the existing machines. In addition to the smaller size, the chiller was outfitted with a refrigerant migration economizer or free cooling option. The free cooling chiller uses outside air and the cooling tower to cool the water, allowing the chiller to meet winter load without having to run the compressor. To maintain the plant's high efficiency in the summer months, a complete tear down and rebuild was performed on their 900-ton Chiller 2, in addition to 3 Adaptiview control upgrades applied to all existing chillers and a variable frequency drive that was applied to one of their existing chillers. The controls on all of the chillers, associated pumps, cooling towers and valves were upgraded to Tracer Summit controls so that Progressive could achieve better efficiency and be able to communicate campus wide using the same building automation system.



Progressive Campus I Chiller Plant • Mayfield Village, OH

The Campus I Chiller Plant is located on the ground floor of the East Block and consists of three 900-ton chillers, one 400-ton Swing Chiller, three cooling towers, primary / secondary chilled water distribution, four condenser water pumps and Tracer Summit Building Automation System.

Project Overview

- New 400-ton Swing Chiller w/ Free Cooling Option
- Tracer Summit Building Automation System
- R'newal, Complete Tear Down & Rebuild to Chiller 2, Addition of VFD
- Adaptiview Control Upgrades to existing Chillers
- Variable Frequency Drives (VFDs) for Condenser Pump Operation

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Results

The renovation of the Progressive Campus I Chiller Plant has revolutionized the aging legacy plant with modern chiller and controls technology to dramatically improve operating efficiency and extend the life of the plant beyond the expected life of 15 to 20 years. The new 400-ton free cooling chiller is more efficient than all of the existing 900-ton chillers and can provide free cooling in the winter months. Progressive has seen a 51% reduction in their energy costs, the lowest in 18 years. In the past 8 months since the plant renovation was completed, Progressive has saved \$348,000 versus the same time period last year. The future cost avoidance is in excess of \$120,000 per month, which will yield a total net payback of the investment in approximately one year. Based on the success of Campus I, Progressive is currently investigating additional opportunities at similar chiller plants elsewhere in the portfolio.

“This venture was successful due to the collaboration and cooperation of all the individuals and teams involved, to install a more efficient chiller plant system. This system has the adaptability to allow for changes and utilize measurement and verification to achieve the highest efficiency possible out of the equipment.”

Mark Mansell, CEM, Building Automation Manager - Progressive

Graph showing
energy savings

Savings in the First Year

- 51% Decrease in Energy Usage
- New 400-Ton Chiller is 3x More Efficient
 - 0.273 kW/ton at 400 Tons at Full Load
 - 0.194 kW/ton at 250 Tons at Partial Load
 - 0.375 kW/ton at 525 Tons at Maximum Load
- Future Cost Avoidance >\$120,000 per month

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For more information on Gardiner Solutions, visit
www.WHGardiner.com or contact us at 440.248.3400